In the claims:

1. (currently amended) Apparatus for providing bandwidth management services for a user in an optical communication system, comprising:

a network device with an optical service agent including:

an application programming interface ~~operative to receive~~ which receives input from a user application indicative of application-specific bandwidth management service requirements;

a user-to-network interface (UNI) ~~for interfacing~~ which interfaces with an optical communication network in which data is processed and transported only in optical form;

a peer-to-peer interface ~~for interfacing~~ which interfaces with peer users; and

optical service logic ~~for interacting~~ which interacts with the application programming interface and the optical communication network via the UNI and with the peer users via the peer-to-peer interface for providing said application-specific bandwidth management services for the user, including provision of a new optical communication path between specified nodes in the optical communication network; and

an optical service server ~~operative to authenticate~~ which authenticates the user, [[obtain]] obtains network topological information, and ~~to employ~~ employs the network topological information on behalf of the optical service agent for providing bandwidth management services such that the network topological information is not exposed to the user.

2. (previously presented) The apparatus of claim 1, wherein the optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

3. (previously presented) The apparatus of claim 1, wherein the optical service logic comprises:

bandwidth monitoring logic for monitoring bandwidth utilization on a connection.

4. (previously presented) The apparatus of claim 1, wherein the optical service logic comprises:

bandwidth controlling logic for controlling bandwidth utilization on a connection.

5. (previously presented) The apparatus of claim 1, wherein the optical service logic comprises:

bandwidth obtaining logic for obtaining additional bandwidth for a connection.

6. (previously presented) The apparatus of claim 1, wherein the optical service logic comprises:

bandwidth relinquishing logic for relinquishing excess bandwidth for a connection.

7. (previously presented) The apparatus of claim 1, wherein the optical service logic comprises:

bandwidth allocation logic for allocating bandwidth among multiple connections.

8. (currently amended) The apparatus of claim 4, wherein the bandwidth controlling logic ~~is operably coupled to prevent~~ prevents bandwidth utilization on the connection from exceeding a predetermined maximum bandwidth utilization.

9. (currently amended) The apparatus of claim 5, wherein the bandwidth obtaining logic ~~is operably coupled to obtain~~ obtains the additional bandwidth for the connection upon determining that bandwidth utilization on the connection exceeds a predetermined level.

10. (currently amended) The apparatus of claim 6, wherein the bandwidth relinquishing logic ~~is operably coupled to relinquish~~ relinquishes excess bandwidth for the connection upon determining that bandwidth utilization on the connection is below a predetermined level.

11. (currently amended) The apparatus of claim 7, wherein the bandwidth allocation logic ~~is operably coupled to identify~~ identifies an over-utilized connection and an under-

utilized connection and ~~to transfer~~ transfers traffic from the over-utilized connection to the under-utilized connection.

12. (currently amended) ~~A device~~ Apparatus comprising:

a network device including:

a user application requiring communication services from an optical communication network in which data is processed and transported only in optical form; and

an optical service agent ~~operative in response~~ responsive to signaling from the user application for communicating with the optical communication network and providing application-specific optical communication network bandwidth management services for the user application, including provision of a new optical communication path between specified nodes in the optical communication network; and

an optical service server ~~operative to authenticate~~ which authenticates the user application and ~~to obtain~~ obtains network topological information which is employed on behalf of the optical service agent for providing bandwidth management services such that the network topological information is not exposed to the user application.

13. (currently amended) The [[device]] apparatus of claim 12, wherein the optical service agent comprises:

a user-to-network interface (UNI) for interfacing with the optical communication network;

a peer-to-peer interface for interfacing with peer users; and optical service logic for interacting with the optical communication network via the UNI and with the peer users via the peer-to-peer interface for providing said bandwidth management services for the user application.

14. (currently amended) The [[device]] apparatus of claim 13, wherein the optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

15. (currently amended) The [[device]] apparatus of claim 13, wherein the optical service logic comprises:

bandwidth monitoring logic for monitoring bandwidth utilization on a connection.

16. (currently amended) The [[device]] apparatus of claim 13, wherein the optical service logic comprises:

bandwidth controlling logic for controlling bandwidth utilization on a connection.

17. (currently amended) The [[device]] apparatus of claim 13, wherein the optical service logic comprises:

bandwidth obtaining logic for obtaining additional bandwidth for a connection.

18. (currently amended) The [[device]] apparatus of claim 13, wherein the optical service logic comprises:

bandwidth relinquishing logic for relinquishing excess bandwidth for a connection.

19. (currently amended) The [[device]] apparatus of claim 13, wherein the optical service logic comprises:

bandwidth allocation logic for allocating bandwidth among multiple connections.

20. (currently amended) The [[device]] apparatus of claim 16, wherein the bandwidth controlling logic ~~is operably coupled to prevent~~ prevents bandwidth utilization on the connection from exceeding a predetermined maximum bandwidth utilization.

21. (currently amended) The [[device]] apparatus of claim 17, wherein the bandwidth obtaining logic ~~is operably coupled to obtain~~ obtains the additional bandwidth for the connection upon determining that bandwidth utilization on the connection exceeds a predetermined level.

22. (currently amended) The [[device]] apparatus of claim 18, wherein the bandwidth relinquishing logic ~~is operably coupled to relinquish~~ relinquishes excess bandwidth for the connection upon determining that bandwidth utilization on the connection is below a predetermined level.

23. (currently amended) The [[device]] apparatus of claim 19, wherein the bandwidth allocation logic ~~is operably coupled to identify~~ identifies an over-utilized connection and an underutilized connection and ~~to transfer~~ transfers traffic from the over-utilized connection to the under-utilized connection.

24. (currently amended) A system comprising:

an optical communication network in which data is processed and transported only in optical form;

a first network user coupled to the optical communication network, wherein the first network user comprises an optical service agent ~~operative in response~~ responsive to signaling from a user application to obtain application-specific optical communication services from the optical communication network via a user-to-network interface (UNI) communicating with the optical communication network and for providing application-specific bandwidth management services for the first network user, including provision of a new optical communication path between specified nodes in the optical communication network; and

an optical service server ~~operative to authenticate~~ which authenticates the first network user and ~~to obtain~~ obtains network topological information which is employed on behalf of the optical service agent for providing bandwidth management services such that the network topological information is not exposed to the first network user.

25. (original) The system of claim 24, wherein the optical communication network comprises an automatically switched optical/transport network (ASON), and wherein the UNI comprises an ASON UNI.

26. (currently amended) The system of claim 24, wherein the optical service agent ~~is operably coupled to monitor~~ monitors bandwidth utilization on a connection.

27. (currently amended) The system of claim 24, wherein the optical service agent ~~is operably coupled to control~~ controls bandwidth utilization on a connection.

28. (currently amended) The system of claim 24, wherein the optical service agent ~~is operably coupled to obtain~~ obtains additional bandwidth for a connection.

29. (currently amended) The system of claim 24, wherein the optical service agent ~~is operably coupled to relinquish~~ relinquishes excess bandwidth for a connection.

30. (currently amended) The system of claim 24, wherein the optical service agent ~~is operably coupled to allocate~~ allocates bandwidth among multiple connections.

31. (currently amended) A computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to be executed to implement a method for managing bandwidth for a user application in an optical communication system in which data is processed and transported only in optical form, the-method comprising:

monitoring bandwidth utilization [[by]] , using an optical service agent [[in]] associated with the user application, on a connection in the optical communication system;

controlling bandwidth utilization [[by]] , using the [[an]] optical service agent [[in]] associated with the user application, on [[a]] the connection in the optical communication system in response to signaling from [[a]] the user application to provide application-specific bandwidth utilization control;

obtaining additional bandwidth [[by]] , using the [[an]] optical service agent [[in]] associated with the user application, for [[a]] the connection in the optical communication system in response to signaling from the user application to provide application-specific additional bandwidth, including provision of a new optical communication path between specified nodes in the optical communication system;

relinquishing unused bandwidth [[by]] , using the [[an]] optical service agent in the user application, for [[a]] the connection in the optical communication system in response to signaling from the user application to provide application-specific relinquishing of bandwidth; and

allocating bandwidth [[by]] , using the [[an]] optical service agent, among multiple connections in the optical communication system,

prior to which an optical service server executes the following steps:

authenticating the user application;

obtaining network topological information; and

employing the network topological information on behalf of the optical service agent to provide bandwidth management services such that the network topological information is not exposed to [[the]] a first network user.

32. (currently amended) The computer program product [[method]] of claim 31, wherein the method further comprises controlling bandwidth utilization on a connection comprises:

monitoring bandwidth utilization on the connection;

determining that the bandwidth utilization has exceeded a predetermined level; and

taking an action to prevent the bandwidth utilization from exceeding a predetermined maximum bandwidth utilization.

33. (currently amended) The computer program product [[method]] of claim 32, wherein the method further comprises taking an action to prevent the bandwidth utilization from exceeding a predetermined maximum bandwidth utilization comprises dropping packets.

34. (currently amended) The computer program product [[method]] of claim 31, wherein the method further comprises obtaining additional bandwidth for a connection comprises:

monitoring bandwidth utilization on the connection;

determining that the bandwidth utilization has exceeded a predetermined level; and

obtaining additional bandwidth for the connection.

35. (currently amended) The computer program product [[method]] of claim 31, wherein the method further comprises relinquishing unused bandwidth for a connection comprises:

monitoring bandwidth utilization on the connection;

determining that the bandwidth utilization is below a predetermined level; and

relinquishing excess bandwidth for the connection.

36. (currently amended) The computer program product [[method]] of claim 31, wherein the method further comprises allocating bandwidth among multiple connections comprises:

monitoring bandwidth utilization on a number of connections;

identifying an over-utilized connection and an under-utilized connection; and

transferring traffic from the over-utilized connection to the underutilized connection.